

## CLAIMS:

1. A bandwidth manager for controlling bandwidth resources in an ethernet network having a plurality of nodes, selected pairs of nodes being separated by links of predetermined link bandwidth capacities, the ethernet network having a plurality of paths connecting at least two of the plurality of nodes together, each of said plurality of paths being composed of at least one link, said bandwidth manager comprising:
  - means for receiving a bandwidth reservation request including a requested bandwidth capacity, an origination point and a destination point;
  - means for storing available bandwidth capacity for each link in the ethernet network; and
  - means for reserving link bandwidth capacity on a selected one of the plurality of paths based on said bandwidth reservation request and said available bandwidth capacity for each link in the selected one of the plurality of paths.
- 15 2. The bandwidth manager of claim 1 wherein said means for reserving link bandwidth capacity includes:
  - means for consulting said means for storing to determine if the bandwidth capacity available for all links in the selected one of the plurality of paths is greater than the requested bandwidth capacity; and
  - means for reserving bandwidth for the links of the selected one of the plurality of paths if the bandwidth reservation request can be satisfied for all links in the selected one of the plurality of paths.
- 25 3. The bandwidth manager of claim 1 further including means for determining the selected one of the plurality of paths based on the origination point and the destination point in the bandwidth reservation request.
4. A method of controlling bandwidth resources in an ethernet network having a plurality of nodes, selected pairs of nodes being separated by links of predetermined link bandwidth capacities, the ethernet network having a plurality of paths connecting at least two of said plurality of nodes together, each of said plurality of paths being composed of at least one link, said method comprising the steps of:

receiving a bandwidth reservation request including a requested bandwidth capacity, an origination point and a destination point;

storing available bandwidth capacity for each link in the ethernet network; and  
reserving link bandwidth capacity on a selected one of the plurality of paths  
5 based on said bandwidth reservation request and said available bandwidth capacity for  
each link in the selected one of the plurality of paths.

5. The method of claim 4 wherein said step of reserving link bandwidth capacity includes the steps of:

10 consulting the stored bandwidth information to determine if the bandwidth capacity available for all links in the selected one of the plurality of paths is greater than the requested bandwidth capacity; and

reserving bandwidth for the links of the selected one of the plurality of paths if the bandwidth reservation request can be satisfied for all links in the selected one of the plurality of paths.

6. The method of claim 6 further including the step of determining the selected one of the plurality of paths based on the origination point and the destination point in the bandwidth reservation request.

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7. A node on an ethernet network for controlling bandwidth resources, the ethernet network having a plurality of nodes, selected pairs of nodes being separated by links of predetermined link bandwidth capacities, a plurality of paths connecting at least two of the plurality of nodes, each of said plurality of paths being composed of at least one link, said node comprising:

a receiver accepting a bandwidth reservation request including a requested bandwidth capacity, an origination point and a destination point;

a data store containing available bandwidth capacity for each link in the ethernet network; and

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a request processor for reserving link capacity on a selected one of the plurality of paths based on said bandwidth reservation request and said available bandwidth capacity for each link of the chosen one of the plurality of paths.

8. The node of claim 7 wherein said request processor includes:  
a data store interface for accessing said data store to determine if the bandwidth capacity available for all links in the selected one of the plurality of paths is greater than the requested bandwidth capacity; and  
5 a booking manager for reserving bandwidth for the links of the selected one of the plurality of paths if the bandwidth reservation request can be satisfied for all links in the selected one of the plurality of paths.

9. The node of claim 7 further including a path choosing module for determining  
10 the selected one of the plurality of paths based on the origination point and the destination point in the bandwidth reservation request.

10. A computer readable medium having stored thereon computer executable instructions for controlling bandwidth resources in an ethernet network having a plurality of nodes, selected pairs of said plurality of nodes being separated by links of predetermined link bandwidth capacity, the ethernet network having a plurality of paths connecting at least two of said plurality of nodes together, each of said plurality of paths being composed of at least one link, said computer executable instructions comprising the steps of:  
15 receiving a bandwidth reservation request including a requested bandwidth capacity, an origination point and a destination point;  
storing available bandwidth capacity for each link in the ethernet network; and  
reserving link bandwidth capacity for a selected one of the plurality of paths based on said bandwidth reservation request and said available bandwidth capacity for  
20 each link in the chosen one of the plurality of paths.

11. The computer executable instructions of claim 10 wherein said step of reserving link bandwidth capacity includes the steps of:  
30 consulting the stored bandwidth information to determine if the bandwidth capacity available for all links in the selected one of the plurality of paths is greater than the requested bandwidth capacity; and

reserving bandwidth for the links of the selected one of the plurality of paths if the bandwidth reservation request can be satisfied for all links in the selected one of the plurality of paths .

5 12. The computer executable instructions of claim 10 further including the step of determining the selected one of the plurality of paths based on the origination point and the destination point in the bandwidth reservation request.

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